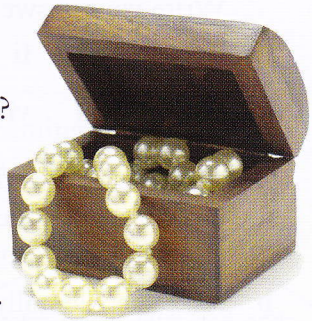
b Jake rearranged the packets to make whole boxes.
To find the number of boxes he has now Jake wrote

$5 \times \frac{3}{4} = \frac{15}{4}$

$= 3\frac{3}{4}$

Explain to a classmate how you could show with diagrams that he is correct.

2 Write an equation similar to the one Jake wrote in **question 1 b** for each of these.



a Madhu made three jewellery boxes.
For each one she used $\frac{3}{4}$ m of wood.
How many metres of wood did she use altogether?

b Stephanie made seven aprons for the market.
Each one used $\frac{7}{9}$ m of material.
How many metres did she use altogether?

c Ray had eight boxes of juice. Each one was $\frac{11}{15}$ full.
How many boxes of juice would Ray have if he filled as many boxes as he could?

3 Look at the equations you have written for **questions 1 and 2.**

a What do you notice about how you could work out the answer using just the numbers? Explain to a classmate how this can be done.

b Which letter does each ? stand for in this equation?

$$r \times \frac{p}{q} = \frac{? \times ?}{?}$$

c Find the answers to these without drawing diagrams.

i $7 \times \frac{2}{3}$ **ii** $11 \times \frac{3}{4}$ **iii** $12 \times \frac{2}{5}$ **iv** $10 \times \frac{3}{8}$

v $14 \times \frac{2}{5}$ **vi** $24 \times \frac{4}{5}$ **vii** $32 \times \frac{3}{7}$ **viii** $48 \times \frac{5}{12}$

ix $100 \times \frac{4}{15}$ **x** $82 \times \frac{7}{20}$

4 Find the answers to these. Show how you did each.

a Reece's tomato plants were 49 cm tall.
If Val's tomato plants were $\frac{5}{7}$ as tall as Reece's plants, how tall were they?

b Jilly bought 84 m of rope to make a swing and rope ladder. She used $\frac{5}{12}$ of it for the swing and $\frac{3}{7}$ for the rope ladder. How much did she have left?

Find fractions of whole number amounts using multiplication and division.
Fractions Times Whole Numbers Book 8
Whole Number Times Fractions Book 8

5 Challenge

a Find the answer to these.

i $\frac{3}{4} \times 10$ and $10 \times \frac{3}{4}$ ii $50 \times \frac{9}{20}$ and $\frac{9}{20} \times 50$ iii $85 \times \frac{3}{7}$ and $\frac{3}{7} \times 85$

b Does the order of multiplication matter? Explain your answer.

c What is the property called when the order of multiplication doesn't matter?

Fraction trivia

Find the answers to these. Show how you did each.

1 A flea can long jump 33 cm. It can high jump $\frac{3}{5}$ of this distance.
How high can a flea jump?

2 It takes about seven hours to drive to Queenstown from Christchurch.
It takes about $\frac{1}{6}$ of this time to fly. About how long does it take to fly?

3 Solder is used to join two metals together. About $\frac{3}{5}$ of solder is tin.
How much tin is needed to make 68 g of solder?

4 Mount Taranaki is about $\frac{2}{3}$ the height of Aoraki (Mount Cook).
If Aoraki is about 3050 m, how high is Mount Taranaki?

5 The longest rattlesnake is about 2·7 m long. The smallest is about $\frac{1}{9}$ the length of the longest. About how many centimetres is the smallest rattlesnake?

6 On average a queen bee lives for about three years. A male drone bee lives for about $\frac{1}{26}$ of a queen bee's life. For how many weeks does a drone live?

7 A model radio-controlled car is made to $\frac{1}{8}$ scale.
A Ferrari F50 car is 4·48 m long. How long is the model Ferrari F50?